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ABSTRACT

This is the final report from a three-year project to develop and provide information to assist in setting national priorities for research and development in vocational education. The major objective of the third year was to obtain a more future-oriented perspective on needed research and development. To accomplish this objective, papers and proceedings from two conferences conducted by the National Center for Research in Vocational Education were analyzed to identify suggestions for research and development, and recommendations were obtained from a national panel of researchers and administrators. Among the findings was that all of these different sources agreed that in the 1980s vocational education will be a more diverse enterprise than it has been in the past. There are likely to be more older clients and proportionally more minorities and individuals who will need special services. Anticipated high rates of technological innovation and limited resources for modernization of equipment indicate that vocational education will have to cooperate much more with employers and other providers of training. (Appended material includes definitions of the fifteen general need areas and specific needs within each area identified in the first year of the study.) (LRA)

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AN R&D AGENDA TO RESPOND TO FUTURE NEEDS IN VOCATIONAL EDUCATION

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FOREWORD

One of the tasks requested of the National Center under its contract with the Office of Vocational and Adult Education, U.S. Department of Education, has been to develop and provide information to be used in setting national priorities for research and development in vocational education. This is the third report produced under the National Center contract that has presented information for this purpose.

The project that produced these reports has been directed by Morgan Lewis. Several staff members have worked with him at various times. In the preparation of this report he was assisted by Paulette Robinson, Fidelia Chukwuma, and Wheeler Richards.

In addition to National Center staff, the project has drawn upon many consultants within vocational education and several from other disciplines who have a professional interest in the field. In the present year the project benefited from R&D suggestions provided by a panel of thirty-two nationally recognized researchers and administrators who are listed in Appendix B. Two panelist, C. J. Cotrell, Temple University, and John Washburn, Illinois State Board of Education, also provided valuable critiques of a preliminary draft of this report, as did Linda Lotto of the National Center staff. Editorial review was performed by Janet Kiplinger.

The efforts of the many people who have contributed to this project are much appreciated.

Robert E. Taylor
Executive Director
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Research in Vocational
Education

EXECUTIVE SUMMARY

This is the final report from a three-year project to develop and provide information to assist in setting national priorities for research and development (R&D) in vocational education. During the first two years of the project, a list of fifteen durable and pervasive needs was developed and verified, background papers were prepared on needs judged amenable to R&D solutions, recent and current R&D activities were monitored, and conferences were conducted.

The major objective of the third year was to obtain a more future oriented perspective on needed R&D. To do so the papers and proceedings from two conferences conducted by the National Center were analyzed to identify suggestions for R&D, and recommendations were obtained from a national panel of researchers and administrators.

All of these different sources agreed that in the 1980s vocational education will be a more diverse enterprise than it has been in the past. It will be serving a wider variety of clients in a larger number of different settings. There are likely to be more older clients and proportionally more minorities and individuals who will need special services. Anticipated high rates of technological innovation and limited resources for modernization of equipment indicate that vocational education will have to cooperate much more with employers and other providers of training.

To respond to the environment of the 1980s, vocational education will have to make major changes in the way its services are provided to clients. Curriculum will have to be developed and modified to inhance its flexibility and to enable it to be adapted to the varying needs of a much more diverse body of clients. Individualized instruction with open-entry/ open-exit may well become the customary instructional mode.

In addition to these curriculum changes, teachers will need help to redefine their roles. Vocational teachers will become less transmitters of information working primarily in classrooms and laboratories, and more managers of learning, planning and coordinating activities in work settings throughout the community.

A change of this scope will not, of course, come easily. The resistance that confronts any major institutional change will have to be overcome. Much new knowledge will need to be produced and made available to the profession. The R&D needed to move toward this more flexible, community oriented style of vocational education would make a worthwhile agenda for the 1980s. Specific suggestions of the kinds of R&D that should be conducted, as obtained from the conferences and the panel, are provided in this report.

CHAPTER 1

INTRODUCTION

Research and development (R&D) activities are essential to institutional change and renewal. In education, most R&D is mission oriented; it is intended primarily to improve the educational process. This is especially true in vocational education where the authorizing legislation specified that an applicant for an R&D contract must ". . . demonstrate a reasonable probability that the contract will result in improved teaching techniques or curriculum materials that will be used in a substantial number of classrooms or other learning situations within five years after the termination date of such contract" (P.L. 94-482 Sec. 131 (b)).

If those who conduct and administer R&D are to have any chance of satisfying this requirement, it is crucial that their efforts be directed to topics of major concern that are amenable to R&D intervention. The present report, like its two predecessors, is designed to provide information that will assist those who must set priorities for R&D to select such topics. This report was prepared at the request of the Office of Vocational and Adult Education, U.S. Department of Education, to assist in setting national priorities, but it should be of interest to any agency that must make R&D decisions in vocational education.

This chapter presents a brief summary of the first two years of this project. It then discusses the major activities and results from the third year. Put succinctly as possible, the overall conclusion derived from the results of these three years is as follows:

> Vocational education R&D should emphasize curriculum development, instructional processes, and evaluation activities in order to find and develop better ways of serving more diversified clients in a wider variety of settings.

This one sentence is obviously open to a number of explanatory and qualifying comments. Nevertheless it contains the basic themes derived from a number of different types of information assembly and analysis techniques. This chapter briefly describes these procedures and findings for all three years and the subsequent chapters discuss the activities of the third year in more detail.

Previous Work

First Year

In the three years that this project has been in progress several steps have been taken to develop information on needs that are amenable to R&D. The work in the first year was reported in Research and Development Needs of Vocational Education (Lewis 1979). That report discussed the procedures that were followed to develop a list of fifteen major need areas. Before deciding what needs were amenable to R&D, it was necessary to determine what were the longterm needs of widespread or national significance.

A need was defined as a discrepancy between what the condition regarding a particular goal or objective was and what the condition should be. Goals and objectives of vocational education, as compiled from a variety of sources, were compared with assessments of current reality to identify those discrepancies that define significant needs. Some of the sources drawn upon were specific needs assessments (Adams 1977, Morrison 1976) which obtained importance or discrepancy ratings from selected groups of respondents. Others were more general assessments of the status of vocational education, such as A Report to the Nation on Vocational Education (Ellis 1975) and What Is The Role of Federal Assistance for Vocational Education (Comptroller General, the "GAO Report" 1974). Still others were general statements of policy or legislation from which the discrepancy between what is and what should be could be inferred (National Association of Manufacturers, Secondary Vocational Education. NAM Public Policy Report 1975, P.L. 94-482). Of course, the COVERD report, Committee on Vocational Education Research and Development (1976), was also included.

Once a preliminary list of major needs had been compiled from these sources, it was subjected to a number of refinements both with staff from various divisions of the National Center and with external consultants. The external consultants were also asked to select from among the fifteen need areas the five that they considered most important for future R&D efforts. In making these judgments they were asked to balance the importance of the need and the potential impact that R&D could have.

The recommendations of the consultants were considered, together with the information that had been developed from the other sources, and five need areas were selected to receive additional attention:

- Coordination and Articulation
- Curriculum Content and Instruction

- Data Collection and Evaluation
- Planning
- Transition from School to Work *

Once these need areas had been selected, consultants were identifed who were knowledgeable in these five areas. These consultants were asked to develop background papers which raised important R&D questions that should be addressed within each area. These papers were included in the first year report.

Second Year

The activities conducted during the second year of the project were directed toward identifying the need areas that were the focus of recent and current R&D projects. The documents submitted to the ERIC Clearinghouse in Adult, Career, and Vocational Education, which typically report on completed projects, were used to chart recent R&D efforts. The focus of current R&D was determined by examining the abstracts of newly funded state and federal projects that were received by the National Center Clearinghouse. This clearinghouse is designed to track all R&D projects funded under Title II of the Education Amendments of 1976 (P.L. 94-482). All documents and abstracts received by the two clearinghouses during the first half of 1979 were examined and classified according to the major need areas which they addressed.

Career development was by far the need area most often found in this analysis. Out of a total of 1,523 reports and abstracts that were examined, 514 were classified in this area. The second most frequent area was curriculum content and instruction with 386 reports and abstracts. These two need areas accounted for almost six out of every ten recent and current projects examined. Following these two areas in frequency were special needs groups (151 reports and abstracts), data collection and evaluation (116) and personnel development (90). Thus out of the five need areas selected for special attention during the first year of this project, two were found to rank among the top five in recent and current activity, as measured by the number of state and federal projects directed to them.

The review of documents received by the two clearinghouses identified recent and current R&D activities. These documents, however, did not provide much to indicate future directions for R&D. To obtain a more future oriented perspective, a small

* Appendix A presents definitions of the fifteen general need areas and specific needs within each area.

conference of administrators of vocational programs and of research programs was convened at the National Center. All of the participants were asked to prepare initial statements of their perceptions of the most pressing needs in the field. These statements served as the basis for conference discussion. Out of this discussion consensus emerged on four broad categories:

- o Linkage
- o Access
- o Accountability
- o Professional development

Two of these categories include three of the need areas identified during the first year of the project. Linkages includes all the needs classified under coordination and articulation. Accountability includes the areas of data collection-evaluation and planning. Access includes components of those needs labeled "availability of programs" and "sex discrimination/equal opportunity" in the list of fifteen need areas developed during the first year of this project. Professional development, of course, is another label for the activities grouped under personnel development.

Availability of programs and personnel development are of central importance to vocational education. Without adequate facilities and personnel, quality programs cannot be offered. Nevertheless it was the judgment of project staff and the panelists contacted during the first year of this project that these are not needs which are particularly amenable to R&D interventions. Research can identify where vocational facilities are most needed and the kinds of programs that should be offered, but availability is ultimately a question of adequate resources, not research. When programs are unavailable to people who need them, it is not because vocational educators need new knowledge or answers to basic questions. For similar reasons, personnel development was not selected as a high priority R&D area. Better and more extensive preservice and inservice activities are crucial, and, many would argue, far more crucial then R&D. Once again, however, these needs would be more responsive to types of interventions other than R&D.

Thus the first year of this project identified five need areas as prime candidates for R&D attention. The second year found support for four of the five areas that had been identified. The one need area that had been selected that was not supported by the information assembled in the second year was transition from school to work. The national attention

directed to transition problems--as reflected in the work of the Vice-Presidents Task Force on Youth Employment and the proposed youth legislation--indicates that this remains a suitable topic for priority consideration.

Present Year Activities

The present year, the third, was the last in this project. The main objective of this year was to explore longer range R&D needs. Two main methods were used: an analysis of documents and proceedings produced by two future oriented conferences conducted by the National Center and the collection and analysis of the opinions of a peer-nominated panel of thirty-two researchers and administrators in vocational education.

The two conferences were both future oriented but they had different emphases. One was focused on developing an R&D agenda. It actually consisted of two regional workshops and a final plenary conference. The invited participants had all conducted research or written on vocational education, but none of them had traditional vocational education backgrounds. Some were asked to write background papers on selected topics, such as equity or matching labor market needs, and others were asked to react to these papers. The papers and the reactions were discussed by the participants as well as selected staff members from the National Center. The papers, plus a summary of the main themes from the discussions (Walker 1979), were reviewed to identify all suggestions for R&D efforts. All such suggestions were classified into the fifteen need areas.

The second conference was devoted to a consideration of alternative futures for vocational education. The participants consisted of representatives of various groups concerned with vocational education, such as the U.S. League of Cities CETA-vocational education linkage program, the American Vocational Association, and the American Association of Community and Junior Colleges. Also attending were government officials concerned with educational policy, futurists who had conducted studies related to the conference theme and many of the senior staff members of the National Center. All of the proceedings of the conference were transcribed. At its close, participants were asked to list what they considered to be the most important R&D needs for the 1980s. These suggestions and any obtained from the proceedings were also classified into the fifteen need areas.

The other major method of assessing future R&D needs was to collect and summarize the opinions of thirty-two nationally recognized researchers and administrators in vocational education. These panelists were asked to react to a brief scenario describing a "most likely" future for vocational

education in the 1980s (Appendix B). Then, in light of their conception of what the 1980s will be like, the panelists were asked what they considered to be the most important R&D topics for this decade. These suggestions were abstracted, summarized, and classified into the fifteen major need areas.

The overall conclusion derived from the information assembled from these various sources was stated on page 1: R&D in vocational education should emphasize curriculum development, instructional processes, and evaluation to serve more diverse clients in a wider variety of settings. The different sources varied, of course, in the components they emphasized. Overall, however, there was consensus that vocational education in the 1980s will be a more varied enterprise and that R&D should prepare the field to deal with this diversity.

CHAPTER 2

NEEDED R&D AS SEEN FROM OUTSIDE VOCATIONAL EDUCATION

During the first two years of this project, most of the information compiled was from sources and professionals within vocational education. One of the objectives of this the final year of the project was to obtain perspectives from professionals who have a scholarly interest in the field but who are not working directly in vocational education. The other main objective was to obtain more long range, future oriented perspectives.

Two activities at the National Center provided sources which helped these objectives to be achieved. This chapter describes those activities and presents the R&D suggestions which were obtained from them.

The Sources

The first activity was an R&D conference which brought together a number of professionals from law, government, education, and the social sciences who have addressed questions of education and human resource policy. Some of the conference participants were asked to prepare background papers on selected topics, such as equity, planning, and the federal role, and to raise research questions regarding these topics. Other participants prepared formal reaction papers. These papers and reactions were discussed at two regional workshops and at a plenary conference. A summary of these discussions was prepared by Walker (1979).

The second activity was a conference on alternative futures for vocational education. This conference brought selected government officials, representatives of organizations concerned with vocational education, and futurists to meet with several senior staff members of the National Center. Prior to the conference, participants were sent a draft copy of a report prepared for the National Center by the Institute for the Future. This report examined major societal trends which appear likely to influence vocational education in the 1980s. During the conference, an overview of the major conclusions of this study was presented. A panel made up of federal officials and representatives of professional organizations presented personal perspectives on the major issues facing vocational education. The participants also took part in workshops in which they developed scenarios for the 1980s with either an optimistic, pessimistic, or "most likely" orientation. At the close of the conference the participants were asked to develop

two lists: one of policy issues and one of R&D questions that face vocational education in the coming decade. These lists and a summary of the conference proceedings were reported by Lewis and Russell (1980).

Analysis

The background papers and summary of the R&D conference and the proceedings of the alternative futures conference were examined to identify all references to needed R&D. In most cases, of course, these references were not recommendations for specific R&D projects. Instead questions were posed or suggestions were made for certain types of data collection or developmental activities, such as, "Under what conditions are vocational programs most successful" and "Develop standard cost accounting procedures."

All such references were classified into the fifteen need areas that have been used for analyses throughout this project. For the material from the two conferences, however, it was not possible to make useful distinctions between suggestions for R&D and those for evaluation. For most other materials reviewed for this project, it was possible to classify suggestions that relate to the development and dissemination of new knowledge and procedures under R&D and suggestions that relate to understanding of effects under evaluation. This distinction was very difficult to make with the conference material and hence the two categories were combined.

There is, in many of the classifications of R&D suggestions into the fifteen need areas a certain arbitrary quality. Many of the suggestions contained elements that could be assigned to two or more of the areas. For example one suggestion was "Training packages to overcome stereotyping." These packages would be used with vocational educators and hence could be classified under personnel development. Since the focus of the suggestion, however, was on overcoming stereotyping, it was classified into that need area. A number of these types of decisions were necessary and the final decision on all suggestions was always made by the project director.

The following section presents an overview of the main themes in the specific suggestions and this is followed by complete listings of all suggestions from each of the conferences. These lists are slightly edited to improve clarity. In general, though, they are very much as stated by the conference participants.

Overview of Suggestions

The previous information that has been assembled by the project has tended to reflect the mission-oriented perspective

of most educational R&D. It has been primarily concerned with improving the practice of vocational education. The questions raised by the participants at the two conferences, particularly the R&D conference, tended to address issues of goal, purpose, and context. These questions reflect concerns about how vocational education relates to the general goals of education and about how vocational education performs broader functions in society.

While not predominate, there were questions frequently asked about the goals that vocational education can reasonably expect to achieve. For example: "Given current labor market conditions (e.g., skills surpluses and job shortages), how much room is there for vocational education to make a difference," and "How can we tell when skill training prior to job entry matters, and if it matters, why and when?" These are the kinds of questions that are expected from individuals concerned with broad questions of human resource development.

Two high priorities in the present national legislation--overcoming sex stereotyping and service to special needs populations--also received considerable attention at both conferences. Planning needs emerged as another focus of concern at the R&D conference.

The alternative futures conference was primarily oriented toward national policy concerns in vocational education. Consequently it yielded a number of questions related to the federal role and the kind of interventions and incentives that the federal government can employ to achieve national objectives. There were also many questions on achieving greater coordination and articulation of vocational education with other areas of education and other trainers. Interaction with employers and unions, another facet of a broader concept of vocational education, also stimulated a number of questions.

In general the suggestions from these two conferences tended to stress the "R" of R&D. They were mainly directed to developing new knowledge about the functions vocational education presently performs, could perform, or should perform in society and on the conditions that facilitate or inhibit performance. The specific questions and suggestions are reproduced in the following pages of this chapter.

R&D Suggestions from Agenda-Setting Conference

Research and Development/Evaluation

- What combination of cognitive, social and technical skills is needed to enter different types and levels of occupations?
- What design of vocational education will give a decent promise that the intellectual, aesthetic, social, and moral resources of workers will flower when gainful employment is ended?
- [When asked about the role of work in the social and economic system]
  - Does social status depend on birth or caste, or is there a system of "meritocracy?"
  - How do various types of work rate in prestige in the process of collective bargaining?
  - What is the relation of formal schooling and the credential system to economic success?
  - What effect will women's liberation have on work patterns?
- Does vocational education promote social stratification?
- Can vocational education remediate societal deficiencies?
- [What are] the conditions leading to work place change [in the context of industrial democracy]?
- [How will this produce] the need for different types of training?
- Summarize and catalogue experiences of how vocational training institutions in a community contribute to planned industrial growth.
- Determine the most efficient and effective mode of delivery for vocational training.
- Given current labor market conditions (e.g., skill surpluses and job shortages), how much room is there for vocational education to make a difference?
- Does vocational education produce benefits that are captured primarily by someone other than the trainee?

- There are differing organizing principles in school; one is based on technocratic ideology and techniques of systems management, the other on socio-technical design, or industrial democracy. [I] believe that socio-tech is stronger in schools and that education is ahead of the employment sector. Will employment have to adopt more socio-tech?

- Research on the cost of mobility might provide a useful guide for determining the causes of the job changes and for developing possible remedial measures.

- We need to know the labor market conditions under which vocational programs are successful.

- Under which circumstances is vocational education most successful?

- What are the net benefits to vocational education from federal support?

- Can vocational education R&D simultaneously meet expressed needs and resolve problems?

- [How can all] not just vocational education students benefit from education-work programs.

- Should training in occupations have limited availability to both men and women alike, i.e., word processing training? [In an attempt to foster greater sex equity.]

- Occupational training for one group promises placement and high pay, however, the other group receives low paying positions in stable or declining sectors. [How can this be justified?]

- Is it possible that greater labor market opportunities are available according to geographic area, race, or sex?

- [Can we] develop alternative ways to expand the vocational education delivery system. . .including the experimental use of entitlements or vouchers to purchase occupational training?

- Is vocational education consistent with the goal [calling for] the full development of human talents?

- [Suppose we are inquiring into the definition of objectives of vocational education] What can one say about historical roles of work in the economy of life?

- Since the trend toward a rapid increase of people with post-secondary certification is predicted, how can justification of "success" of vocational education programs be made?

- . . . evaluation [should] begin to separate programs according to categories that describe the kinds of skills they teach.

- Does participation in vocational education lead to satisfying employment and careers?

- Develop standard cost accounting procedures.

- We need to know the economic consequences of programs for different groups of individuals.

- To estimate the total costs, including foregone earnings, of different types of vocational programs.

- How can we tell when skill training prior to job entry matters? If it matters, [how do we tell] why and when?

- Follow-up studies conducted by the states with federal money do not provide data that could be used to tell us, on a national basis, how recent graduates of occupational programs are distributed by occupation in which they are employed.

- Develop standard follow-up methodologies

- [Do] types of occupational training provided in the inner city by schools and colleges lead to lower paying, lower status jobs?

- [Is it true that]. . .successful programs tend to concentrate on certain kinds of skills.

- Do male dominated occupations [programs] prepare students in them for jobs, or are these programs useless?

- Does vocational education at the secondary level reduce high school dropout rates?

Curriculum Content and Instruction

- Within corporations, industry, and the nation's schools there is a need to identify, through curriculum and training, specific remedies for symptoms of alienation and lack of commitment.

- We have no real idea which vocational programs are more or less effective in passing on different kinds of skills, and the debates about general versus specific skill [training] are completely unresolved.

- The education sector must be provided with the means to become more flexible, and thereby more responsive to technological change that affects the occupational education curriculum.

- . . . plans that are to be taken seriously must be based on a more complex understanding of the links between educational curricula and occupations.

- Transferable skills should be identified that help students enter [any one of] several occupations.

- What role do/should broader social conditions, such as diminishing energy surplus, play in goal formulation?

Sex Discrimination and Stereotyping/Equal Opportunity

- Given these projections [concerning labor force participation of young adults] what major changes will be necessary to provide equitable access to and provision for vocational education to women and younger workers?

- Research to determine the demand side components of discrimination, as well as the supply side (vocational training), will lead to more effective legislative sanctions and incentives.

- [We should examine] the efforts of Sweden in addressing students' education choices which continually reflect traditional work role divisions among the sexes.

- What evidence can be found or generated to promote interest by males in female dominated occupations, and vice versa?

- Admission to vocational programs should be equitable to all groups.

- How can we measure the equity in access [to] and provision of vocational education opportunities?

- A second prerequisite for improving equity in vocational education is better knowledge of the process of tracking into specific vocational programs, including the issue of what the alternatives are for individual students.

Special Needs Groups

- The point of investigating the conditions under which vocational programs are successful should be obvious; if we know what kinds of programs are successful, under what kinds of labor market conditions, then it makes sense to continue those programs and to place disadvantaged pupils in these programs but not in others.

- Determine how and to what extent vocational education can contribute to general education aims, such as improving basic skills, rehabilitating young offenders and handicapped persons, and integrating non-English speaking persons into the economy.

- Unless vocational programs have some economic pay-offs, then it is pointless--even counterproductive--to press for improved equity and access for disadvantaged groups.

- Given the structure of vocational programs [determine] whether the expectation that vocational education be a way of integrating minorities, women, and other "disadvantaged" groups into society is feasible.

- Incentives are needed to keep older workers in the labor force.

Planning

- Perhaps the most important requisite for vocational education planning is to classify our assumptions about the nature of the US economy and the nature of education and training in the next few years.

- Develop procedures on how to use information on labor market demand and occupational training supply for planning vocational programs.

- How can we tell when a particular skill-training program should come into existence, be terminated, grow, or dwindle? Is consensus possible on such matters?

- Agencies should provide planning leadership through technical assistance.

- How can we maintain and strengthen vocational education? While the labor force is growing more slowly, vocational education will still be required in the next two decades to prepare the work force, particularly women and youth whose participation is expected to increase, with meaningful occupational preparation.

Personnel Development

- o People who know something about how vocational education resources can be linked to local economic development are needed as leaders.
- o What are the key publications that might be studied at the undergraduate, graduate, and inservice levels?
- o Are we ready to train vocational educators to provide a kind of general education [adequate for students' needs]?

Interaction with Employers/Unions

- o The structural linkages between training institutions and employers must be strengthened, and, in many instances, changed if inefficient occupational mobility is to be eliminated.
- o To what extent should vocational education be concerned with the quality of work life?

Coordination

- o Bureaucratic competition between career education and vocational education [should be eliminated].
- o What about labor market regulations and certification? How are vocational programs and their clients affected [by these], now, and in the forseeable future?

Career Development Programs

- o All types of counseling should be equally available to all groups.
- o Vocational education counseling must be subject to a major overhaul.

Community/(Citizen) Involvement, Participation, and Communication

- o Vocational education information must be marketed more successfully than it is now.

Availability of Programs

- o Vocational training in urban centers should be upgraded.

R & D Suggestions
From Alternative Futures Conference

Research and Development/Evaluation

- Examine the underlying (both stated and hidden) assumptions of vocational education legislation since 1963 and the empirical and historical basis for their continued use, modification, or abandonment.

- Research federal intervention alternatives. If the federal government provides administrative and development funds, will that enhance availability, participation rates, outcomes?

- What incentives can the federal government provide that will improve the delivery of quality vocational education?

- At what intervention points can federal funds make the greatest impact in improving vocational education?

- What is happening in states with respect to legislation for vocational education i.e., basic laws to establish and fund education/work programs. Is there an inventory of such statutes? This data could help in redefining the federal role in vocational education.

- [There is need to] study, i.e., most appropriate, vs. most efficient interventions, counseling and guidance attitudes and behaviors, etc.

- What outcomes can vocational education reasonably expect to provide?

- Teaching and learning [should be] studied--what works best and for whom?

- What approaches to delivering vocational education work best with which groups of persons?

- Determine factors of employability.

- [What are] the efficacy and relevance of R&D-based solutions?

- Analyses [should be conducted] of the body of literature on the "futures" of vocational education published since 1906 and assessments [should be made of the] strengths and weaknesses of their forecasting or predictive dimensions.

- [Examine] family issues vis a' vis changing roles.

- Voucher scenarios [Study implications for vocational education?]

- [Develop] understanding of "value-added" perspective toward vocational education.

- Job (employee) satisfaction and employer satisfaction [should be examined].

- What are the criteria [for determining] vocational education effectiveness?

- Information on vocational education impact [should be provided] for oversight hearings.

- The measurement of the effectiveness of vocational education [is a top priority].

- [Develop] information systems.

- Descriptive studies [should be conducted] of the major components (students, teachers, curricula, resources, structure, placement) in each of the primary employment development organizations (i.e., public and private secondary schools, proprietary schools, CETA, military, postsecondary institutions, etc.)

Coordination/Articulation

- Determine which services are best and reasonable to be provided by which agencies.

- [We must solve] problems related to cooperation among agencies and organizations concerned with vocational education.

- What are the special needs (requirements) of the different agencies charged with delivering vocational education in different environments (inner city, rural, urban)?

- What are the barriers to cooperation between various agencies delivering vocational education?

- Conduct comparative studies on the relationships between these agencies providing vocational education?

- How can further articulation be achieved among organizations engaged in preparation of individuals for work--including secondary schools, postsecondary, four-year institutions?

- Improvement of articulation between high school, post-high school, two-year institutions, institutions of higher education, business, and federal vocational training agencies [is needed] in terms of cooperative efforts, transfer and recognition of previous vocational training, and the establishment of the opportunity for clients to advance in their career choices.

- How can vocational education (or preparation for employment) become more of an integral part of the total educational system?

- What type of linkages should be formed between vocational education, CETA, and youth programs to make the greatest impact upon preparation of individuals for employment?

Sex Discrimination and Stereotying/Equal Opportunity

- Assess the status of women in vocational education.

- [What are the] structural barriers to women's vocational education?

- [What are the] psychological barriers to women?

- [We need more] training packages to overcome stereotyping.

- [Examine the] economic and societal consequences of inequity.

- How [can we] evaluate the success of vocational education programs regarding equity concerns?

Curriculum Content and Instruction

- [Can we put more effort into] identifying competencies for employability as well as for skills training.

- [Attention should be directed to--]

  - Identifying competencies for consumers.

  - Energy modules for vocational education programs.

  - Energy curriculum development.

  - Curriculum bias issues.

  - Whys and hows of transferrable skills.

Interaction with Employers/Unions

- What mechanisms can be developed or processes initiated to increase collaboration between public education and business, and between industry and labor?

- Research on in-plant vocational training [should be] conducted unilaterally by employers.

- How much training and education in industry is now articulated with vocational education?

- How much training is conducted in cooperation with unions--apprenticeship, upgrading, job specific (in the civil service for instance)?

Special Needs Groups

- Determine discrepancies between abilities of special populations and factors in employability.

- [What is the] relationship between the norms/expectations of key actors in the work place and those of disadvantaged youth and adults regarding work; identify and explain the discrepancies in the expectations of disadvantaged learners, learning facilitators, and employers.

- Efforts [should be made] to assist Indian populations in obtaining or establishing vocational programs.

- What approaches will be most effective in preparing large numbers of vocational professionals to serve the diverse needs of an ever-expanding clientel--adults, disadvantaged, immigrants, and so forth?

Personnel Development

- Vocational education professional development revitalization [is needed]--especially in university graduate programs.

- [We need] improvement of quality of [higher education] personnel development programs.

- Equity and access for professionals in vocational education as well as students [are necessary].

- Training packages for overcoming "we've always done it that way" [attitudes are needed].

Availability of Programs

- How can vocational education be made available to all Americans?

- [What are the main] problems related to increasing the accessibility of vocational education.

Community Involvement

- [How can we overcome] problems related to improving the capability of promoting a more positive image for vocational education.

CHAPTER 3

R & D SUGGESTIONS FROM A NATIONAL PANEL

Throughout this project a variety of sources have been drawn upon to develop information to assist in setting R & D priorities. One of the most helpful of these sources was a panel of thirty-two nationally recognized researchers and administrators in vocational education. This panel was assembled specifically for this project and asked to suggest R & D topics that should receive attention in the 1980s. This chapter discusses the procedures used to assemble the panel, the main themes in the responses received from the panelists, and presents their specific suggestions, classified into the fifteen need areas.

Obtaining Panel Suggestions

The first step in assembling a panel was the preparation of a list by the project director of eleven national leaders in vocational education R & D. No one who had taken part in previous panels for the futures research was included on this original list. Each of these individuals was contacted, invited to participate, and asked to nominate another panelist. Ten of the original eleven agreed to serve and they nominated an additional ten. These ten, in turn, nominated ten more. Additional contacts were made with the female and minority group members to assure adequate representation from these groups.

The final panel consisted of thirty-six individuals of whom thirty-two provided suggestions in time to be included in this analysis. Table 3-1 reports the characteristics of these thirty-two panelists by sex, minority status, and affiliation.

TABLE 3-1

CHARACTERISTICS OF THIRTY-TWO PANELISTS
WHO PROVIDED R & D SUGGESTIONS

Affiliation	Male		Female		Total
	White	Minority	White	Minority	
University faculty	8	3	3	1	15
Local school district	-	1	1	5	7
State department	2	1	-	2	5
Community organization	-	1	-	1	2
RCU, other	3	-	-	-	3
Total	13	6	4	9	32

Once the panel was assembled, the members were sent a short "most likely" scenario for vocational education in the 1980s. This scenario was based on futures research that had been conducted during the previous year (Lewis and Russell 1980). It describes what vocational education will be like if existing trends prevail and if there are no major changes in events or policies. Appendix B presents a copy of this scenario.

The panelists were asked to react to the scenario, to point out where they disagreed, and the reasons for their disagreement. Then, in light of their own conceptions of what the 1980s will be like, the panelists were asked to suggest the kinds of R & D activities that will be most needed in the coming decade. The format was open-ended and the panelists' reactions to the scenario and their suggestions for R & D varied considerably.

All suggestions for R & D were classified into the fifteen need areas that have been the basis for most analysis in this project. The suggestions are presented below largely as they were received from the panelists. They were edited to improve clarity, and in some cases lengthy explanation and justification were removed.

No attempt was made to analyze the reactions to the scenario, but, in general, reactions seemed to correspond to the suggestions for R & D. That is, panelists who thought the

scenario gave insufficient attention to special needs popula- tended to suggest R & D on these populations, panelists were concerned about increasing productivity in the 1980s suggested R & D on productivity, and so on.

Overview of R & D Suggestions

The kinds of R & D suggested most frequently by the panelists involved curriculum/instruction, data collection/evaluation, and service to more diverse clients, including special needs groups. That these areas should receive most emphasis probably surprises no one. Curriculum is the vehicle for delivering most vocational services so it is natural that it received the most frequent mention Data collection/evaluation and service to special needs groups have been growing concerns and received considerable attention in the most recent federal legislation (P.L. 94-482). These concerns appear to be reflected in the panelists' suggestions.

The major theme of the suggestions related to curriculum/instruction was for new, flexible, individualized instructional methods. There were some specific content recommendations, particularly with regard to energy, but far more of the panelists were concerned with finding better ways to deliver services which were more congruent with the needs of clients.

The suggestions that were classified into the data collection/evaluation category related mainly to studying the effects of vocational education on a number of outcomes, some as specific as the "reading, writing, speaking, and computation skills of students," others as broad as "effectiveness in providing a skilled work force." There were also some suggestions for R & D to improve methods of evaluations.

The R & D recommended for special needs groups tended to stress the handicapped and minorities. The emphasis on minorities might be explained by the relatively large proportion (almost half) of minority group members on the panel. This type of interpretation, however, would not explain the emphasis on handicapped. More optimistically, the emphasis given both these populations, and the whole special needs category, reflects a heightened awareness among opinion leaders in vocational education of the need to find more adequate programs and services for these clients.

Personnel development was the need category next most frequently cited by the panelists. Some of the suggestions which were classified in this category reflected the close relationship between R & D and other need areas. For example, one of the suggestions received was "Extensive personnel development-training and retraining of vocational education faculty." For reasons that are mentioned in chapter 4, this

may well be the critical need of the 1980s. This is not, however, basically an R & D need. R & D can be used to identify and develop better ways to conduct training and retraining, but the training itself is not R & D.

The other four need categories that received most frequent mention were Interaction with Employers, Research and Development, Coordination and Articulation, and Sex Discrimination and Sex Stereotyping/Equal Opportunity. With the exception of R & D, the suggestions classified into these categories were directed to a broader concept of vocational education. This concept stresses greater community involvement, increased cooperation with other educators and trainers, and increased efforts to overcome tradition sex roles in vocational programs and in employment.

This broader concept of vocational education was the most pervasive theme in the R & D suggestions received from this panel. It emphasizes the need for more flexible and individualized curriculum and instruction, increased responsiveness to special needs groups, greater community involvement and coordination, and efforts to overcome traditional sex role patterns. The implications of this concept are discussed in greater detail in chapter 4. The remainder of this chapter presents a summary of specific R & D suggestions received from the panelists.

A Summary of Suggested R&D for the 1980s From Thirty-Two Panelists

Curriculum Content and Instruction

Suggestions related to curriculum content

1. Examine energy related occupations and implications for vocational education

   - o Continue to develop, disseminate, and install vocational educations programs that will facilitate energy education (conservation) and production.
   - o Develop curriculum (and evaluations) in new and emerging occupations in energy and energy conservation.
   - o Determine the role and relationship of vocational education to the energy problem and examine the development and testing of various conservative program models.
   - o Demonstrate how to maximize student opportunities for entry into and success in energy related occupations or expand existing programs by incorporating energy technology skill development.
   - o Develop effective energy training programs.
   - o Study energy source development and its relations to vocational education.

2. Explore ways to teach affective skills.

   - o How have the values and beliefs of the American citizen changed for the 1980s? Should vocational education attempt to change current values to be more work oriented, or simply adapt curriculum to the changing values?
   - o How do youths and adults learn employability skills.
   - o There needs to be a reassessment of vocational education's role in transmitting a worker value system to students.

3. Conduct studies related to teaching transferable and adaptive skills

- o Conduct utilization studies related to teaching of transferable and adaptable skills in secondary vocational programs.
- o Conduct research on coping with change on the job.
- o Develop curriculum that will teach youth how to establish, promote, and maintain a small business successfully as a part of the high school course of study.

Suggestions related to instructional processes

1. Develop alternative forms of curriculum and instruction

- o Update teaching strategies and delivery systems.
- o There will be a need to investigate the method/means for providing curriculum, instructional support systems, and the related personnel to deal with expanding and changing environments.
- o Carry out research and development activities that support or affect the improvement of teaching methods and materials used in vocational education programs for expanded, emerging, and redirected occupations.
- o Emphasize functional curriculum methods (i.e., learning style).
- o Develop training delivery systems which are pedagogically suitable for the "new student," which are feasible in content, and for which open-entry/open-exit capability exists.
- o Develop alternative models for implementing individualized education and employment plans for all students.
- o Adopt existing materials to expanded presentation modes, e.g., videotape, computer assisted instruction, close-captioned material for the deaf, and so forth.
- o Develop alternative program delivery models that will apply to a wide range of clientele.

- Change curricula to meet the needs of the new students in terms of their age, ethnic background, maturity, work habits, and job training skills.

- Instruction in vocational programs will seek more instructional materials that are written at normal comprehension levels to accommodate the wide range of ability within one vocational program.

- Design effective techniques to assist adults seeking career mobility or job advancement and identify the more effective methods.

- Develop, validate, and install program models to provide adults with vocational instruction for effective retraining, mid-life career change, career decline, use of leisure time, and retirement.

- Develop and install systems for individualizing vocational instruction for all learners.

- Increase emphasis on evaluating individual instruction systems and seeking and testing new alternative strategies for organizing and sequencing instructional programs to include adaptive interactive testing and cognitive mapping.

- Improve vocational education instruction materials (particularly by developing more competency-based instruction).

- Emphasize competency-based instruction, its development, and its impact on vocational education and integrate it into staff development.

- What is the state of the art on competency-based instruction? Could it be used as effectively for the "military" or for "job corp" as for postsecondary vocational education?

- The focus on competency-based, individualized instruction will expand temporarily, then be modified or dropped because of high attrition rates for lower ability students.

2. Develop standardized curriculum.

- The continuation of the National Network Project should play an important role in competency-based

instruction, curriculum development, and revision.

- o Success-oriented curriculum should be made available and a method to standardize a major portion of it should be formulated.

3. Examine optimum clustering or organization of offerings.

- o Given the scenario of the 1980s, what clustering or organization for curriculum might be best - fifteen clusters, six program areas, or none of these?

- o Revise the secondary educational system by eliminating general curriculum and offering either vocational programs, college preparatory curriculum or both.

Data Collection and Evaluation

1. Suggested specific studies of various effects of vocational education

- o Evaluate vocational education regarding:

  - Its contribution and effectiveness in providing a skilled workforce.

  - Its effectiveness in providing viable options for youth.

  - Its effectiveness in increasing numbers of minorities.

- o Do vocational education programs make discernable differences to students, compared to students in the traditional "college prep" programs? Areas of comparison may include: traditional academic skills; information about labor markets; attitudes toward schooling, work, and social institutions.

- o Determine the social and political effects vocational education has on the environment of educational institutions.

- o Evaluate support systems for reentry adults to identify more effective systems.

- o Develop data and studies that determine the effect of vocational education on college entrance and success, not curriculum.

- Determine the effect of vocational education programs on developing the reading, writing, speaking, and computational skills of students.

- Determine the effect of vocational exploration on students enrolled in eleventh and twelfth grade vocational education programs.

- Evaluate the effectiveness of the competency-based mode of instruction.

- Determine or illustrate what vocational education can and has done for people beyond job placement.

- Conduct cost-benefit studies.

2. Suggested methodological studies

   - Research the effectiveness of the various models for evaluating vocational education.

   - Improve procedures and instruments to better follow up and evaluate secondary, postsecondary, and adult students and programs.

   - Determine the extent to which implementation of mandated vocational education evaluation recommendations improves vocational education programs.

   - Conduct feasibility studies and major pilot projects on the use of state and national sampling strategies to gather data needed for national purposes.

3. General suggestions for more or better evaluation

   - Increased efforts to evaluate programs of vocational educaton, particularly evaluation of effectiveness.

   - Program assessment--including purpose, needs, impact, method.

Special Needs Group

1. Handicapped and others

   - Providing services to people with all kinds of handicaps and determining the needs of these various populations.

   - Develop new techniques for utilizing IEPs with handicapped persons.

- Research efficient, effective method to teach new groups, e.g., elderly, handicapped, bilingual, and incarcerated.

- The continuing need to serve disadvantaged and handicapped populations with the added emphasis on displaced workers, displaced homemakers, and depressed communities.

- Studies dealing with meeting the needs of handicapped disadvantaged women, displaced homemakers, [American] Indians, limited English speaking, and incarcerated youth and adults need special attention.

2. Disadvantaged and minorities

- Developing programs to move the disadvantaged into skill levels that truly constitute the economic mainstream.

- How can minorities be more effectively reached and encouraged to enter vocational programs? What are their present feelings concerning participation in such programs.

- What is the influence, if any, of guidance and counsel staff on the participation of black students in vocational education.

- Develop a federal committee which will be responsible for seriously studying the black and minority unemployment problem and will make workable recommendations for lessening the problem.

- [Conduct] R&D activities on the special problems of minorities in vocational education.

- The special urban and rural problems related to the delivery of vocational education and service to the disadvantaged student need attention.

3. Other populations

- Expand emphasis on serving populations with special needs including implementing alternative types of educational programs (especially if CETA youth initiatives move ahead).

- R&D [is needed] that relates to vocational education in the area of youth and adult unemployment with all its ramifications--vocational education for an increasing alien worker population, for "hard core" unemployment pockets; for school dropouts needing

alternatives to traditional schooling patterns, and workers displaced due to economic shifts.

- How can we best serve adults such as the displaced homemaker and others in a comprehensive program of vocational education?

- Research and development activities [should focus] on the adult learner and his needs.

- Continue to develop and validate alternative program models for serving special populations.

Personnel Development

1. Suggestions to improve and expand personnel development

   - Learning methods for professional personnel development for existing as well as new roles [need to be studied].

   - Research and development [is needed] to facilitate the growth and quality of cooperative education methodology in all levels of vocational personnel development.

   - Increase R&D with respect to the continued staff development for a relatively stable group of secondary, postsecondary, and adult vocational personnel.

   - Extensive personnel development--training and retraining of vocational education faculty--[is needed].

   - Develop linkage models between universities, LEA's and employers for the provision of in-service education.

   - Conduct R&D on alternative curriculum and delivery systems for the preparation of a variety of professional personnel.

   - Develop teacher workshops dealing with career placement career choices, and the state of the art in the public and private sectors.

2. Suggestions to improve leadership development

   - There is a critical shortage of leadership personnel as well as local level leadership in vocational education.

- An increasing number of personnel who have not come up through the ranks in vocational education will be providing the leadership for vocational education.
- Leadership improvement [is needed] at the local level.
- Alternative models [of leadership training] for vocational education [should be] developed and tested.
- AT&T is one example of corporate leadership development that is really needed in vocational education.

3. Suggestions for certification of instructors

- What credentials are necessary for professional personnel involved in assessment, counseling and job placement?
- [Examination of] the certification for instructors and institutions should be given top priority.

Interaction with Employers (Community Participation)

1. Methods to stimulate cooperation with employers

- Design effective techniques for establishing and maintaining a functional relationship between business/industry/labor and vocational educations' administrators.
- Give a tax reduction to business and industry that seriously enroll youth in "paid while learning" programs actually leading to placement in entry level or better positions with the possibility of advancement in the firm or company.
- Demonstrate and test strategies that will enable community, governmental, and private agencies to identify training needs for existing and potential jobs in business and industry.
- Federal, state and local governments as well as private industry should join together in joint ventures to research the needs and develop training programs to meet the vocational education demands of society.
- There needs to be a much more coordinated effort to utilize all available resources in providing quality

vocational education; community involvement in co-operative training arrangement is one way [of doing this], but development of other techniques are needed. Increased emphasis on public relations at the state and local level is needed; development of administrative commitments to the concept of training students for employability is crucial. Establishment of better understanding within the education community is a key to coordination of curriculum and a more assured way to attract quality teachers.

- o There will be more community involvement, especially in cooperative training arrangements.
- o Research and development is needed to provide, expand, and improve linkages between [vocational education] and industry to serve [industry training] needs.
- o Business and industry cooperative efforts including in-plant training, and cooperative programs [should be] designed to have an immediate impact on productivity.
- o Exchange programs between teachers and skilled workers or supervisors in business and industry [should be encouraged].
- o Develop programs to get [stimulate] workers to obtain needed training.

2. Role of vocational education in improving productivity.

- o Continue to develop, disseminate, and install vocational programs that will stimulate worker productivity (e.g. entrepreneurship).
- o [Examine] the role and relationship of vocational education to worker productivity.
- o Determine the effect of vocational education programs on developing worker productivity.

Research and Development

1. Specific types of R&D

- o [Conduct] studies on how people get jobs.
- o Determine what policies (federal, state, and local) have produced what results.

- o Research on problem identification and policy development are needed, given the growing complexity of competing "education for work" systems.

- o What is the relationship between school and work?

- o Determination of processes to determine the extent to which students achieve occupational competencies.

- o What will the impact over the next decade of the following variables as they related to the occupations of the 80's and beyond: age, sex, race, and educational deficiency?

2. Increased emphasis on dissemination and utilization

- o Increased emphasis on dissemination and utilization of R&D products.

- o Dissemination of existing materials but with more emphasis on techniques to increase utilization at the local level rather than just "spread".

- o Wider dissemination and implementation of experience based education models for career and vocational development.

- o Conduct utilization studies related to the teaching of transferable skills.

3. Expand theoretical and empirical knowledge base.

- o Research on new and emerging occupations to help vocational education meet up with the demands.

- o Expand the present knowledge base along the theoretical and empirical divisions in order to deal with the pressing issues in the scenario at the national, state, and local levels.

- o Research that will revise learning theory as it applies to vocational education (late 1980's it would be better to do a lot of basic research now.)

Coordination and Articulation

1. With other educators

- o Develop models for integration and coordination between basic skills, employability skills, and vocational skills.

- Develop model(s) for functional integration of basic skill development into vocational education curricula.

- Determine the relationship, if any, between basic skill level and role of comprehension of vocational skills at both secondary and postsecondary levels of education.

- What steps can be taken to eliminate the divisions existing between vocational education and other disciplines.

- The concern for articulation within education must be continued.

2. With other providers of training

   - Research [should be]conducted to better articulate education and other job preparing sources.

   - [Study] linkage between vocational education and prime sponsors (CETA), labor market, community based organizations, and benefits [that can be] derived.

3. Internally among vocational educators (across levels)

   - [Stimulate] greater demand for articulation in secondary and postsecondary vocational education.

Sex Discrimination and Sex Stereotyping/Equal Opportunity

- [Conduct] further research to develop effective means of getting men and women into nontraditional careers and training programs.

- Continue research on employment and educational barriers [which prevent] elimination of sex role bias.

- Research and development in the area of sex equity and nontraditional careers for males as a neglected consequence resulting from the concentration on women job stereotyping concerns in the 70s and the country.

- Provide equal access for all persons to all programs and equity within programs and within the job market.

- Economic necessity and increased importance of sexual equity (particularly through legislation) have expanded women's options well beyond that of the homemaker role. But while women's participation rate in the labor force approaches that of men's, comparable salary rates have been noted to have increased at a much slower rate than men's--an important point to pursue in the eighties.

- How may we best eliminate the barriers to employment for males and females in areas previously closed to them?

- Assess, at regular intervals, attitudes of vocational administrators, educators, and support staff toward students pursuing nontraditional programs to determine rate of progress and level of support available to these students.

Planning

1. Improve access to and use of data sources in planning

   - Monitor and improve projections of educational enrollment and strategies for dealing with drastic enrollment fluctuation.

   - Given the fact that a multitude of agencies and organizations are involved in job preparation, what is the most effective administrative structure from which statewide planning might come.

   - Access and utilize data sources for vocational education planning and replanning.

2. Develop models to improve joint planning

   - Develop "area wide" planning agencies (below state level)

   - Increased emphasis should be placed on systematic program planning.

   - Develop models to improve joint planning at the state and local levels for new and expanded programs [to make] student enrollment better fit labor markets.

Funding

- Compare funds spent to the increases in equal access to programs.
- [Document the] need for money to be allocated for vocational education.
- Make available federal funding so that CETA type programs and other provisions for disadvantaged youth can be increased and upgraded.
- Vocational education forces must unify during the 1980s especially as we move toward reauthorization, because the present guarantee of state and federal funds may be threatened to some degree.
- What evidence can be found and what lobbying strategies can make sure that home economics is not excluded from federal funding in the future?

Career Development

- Greater emphasis [should be placed] on career education at the eighth, ninth, and tenth grade levels so students can explore the various careers that are available in order to make wiser selections of careers before enrolling in vocational programs.
- Vocational exploration for students enrolled in eleventh and twelfth grade should be emphasized.
- It is important that guidance personnel have a clear perception of vocational education so that they can direct students into appropriate vocational programs to meet their interests and abilities.
- [Conduct] research and development on student needs assessment.
- Develop new and expanded methods of assessing student interest and aptitude with less dependence on paper and pencil inventories.

Availability of Programs

- Identify who the clients of vocational education will be, their location, and the most efficient means of delivery.

- [Expand] program accessibility [through] use of television and other community-based methods.

- Computer based systems for the delivery of vocational education [should be developed] as well as the expansion of competency based systems via computer applications.

CHAPTER 4

SOME FINAL THOUGHTS

This is the final chapter of the report for the final year of this project. As such, it attempts to provide an overview of the major factors that are likely to influence vocational education in the 1980s, and the implications of these factors for R & D in vocational education.

This chapter is, of necessity, more speculative than others in this report. There are no firm guides for what the 1980s will be like. Even if there were more certainty, it would still be necessary to make judgments about the kinds of R & D likely to be needed. The projections about future conditions, however, are grounded in research. For the past two years, work has been underway at the National Center, using accepted methods of futures research, to examine the main influences that will shape the 1980s and their possible impact upon vocational education (Ruff, Shylo, and Russell 1981).

This chapter draws upon this futures research to identify those factors with the greatest implications for R & D. Three main themes were identified: diversity, technological change, and fewer real resources. Each of these may well cause changes in the way vocational education is delivered to clients, and the likely nature of these changes is described. Some of the topics that R & D should address to prepare the field for these changes are also discussed. This discussion does not contain recommendations for specific R & D projects. Instead broad areas of concern, each of which could lead to a number of projects, are raised.

The Probable Context

Three themes tend to dominate considerations of what vocational education will be like in the coming decade: diversity, high rate of technological change, and fewer real resources (Lewis and Russell 1980). Any one of these by itself would cause the field to change to some degree; all three together almost assure that significant changes will be made. These changes are most likely to involve methods of delivering vocational education.

The 1980s will probably see movement toward more individualized instruction offered in a wider variety of settings. Vocational education will also be made available to a more diverse clientele including proportionately more minorities, older students, and persons who are reentering the labor market or making career shifts. Vocational education will play an expanded role in equipping clients for career

change and progress in addition to its tradition role in preparation for entry level employment.

The dynamics that will be causing these changes stem mainly from demographic shifts in the population. The primary influences are the aging of the baby boom (the individuals born between the end of World War II and the early 1960s) and the drop in the number born from the middle 1960s through the 1970s. These changes mean there will be fewer young people in the traditional secondary-postsecondary age range (fourteen to twenty-four) and more in the twenty-five to forty-five year old range. The sheer size of the work force in this older group suggests that opportunities for upward career mobility will be more limited for members of this group. This is likely to cause more mid-career shifts than there have been in previous generations.

Added to the changes arising from demographic shifts will be those caused by technological innovations. One of the basic forces behind this innovation is the microprocessor, which has the potential of replacing every mechanical or electrical control with an integrated circuit (Orme 1979). These circuits are less expensive and more reliable than the devices they replace. They thus offer a considerable incentive for manufacturers to incorporate them into all machinery or equipment requiring control mechanisms. As manufacturers respond to this incentive, integrated circuits will become pervasive in virtually all the advanced technology of our society.

Another major force likely to contribute to technological innovation is the need to improve the productive capacity of American industry. This need has been reflected in a number of ways, most prominently in the call for "reindustrialization" of America. Every indication suggests that the Reaqan administration is likely to promote policies for increasing productive capacity. Among these policies will be incentives for technological innovation.

The third major influence on vocational education in the 1980s is likely to be fewer real resources because of inflation. If funding levels remain the same, or even increase slightly, funds will purchase less goods and services. It is unlikely that appropriation increases will match the rate of inflation.

Education, in general, will almost certainly not receive as large a portion of the gross national product in the 1980s as it received in the 1960s and 1970s. Because of the demographic shifts mentioned above, there will be fewer young people in the traditional student age ranges. This will mean fewer

voters with a personal concern for the quality of education. With declining enrollments, legislatures and school boards will be examining requests for additional funds very carefully.

If vocational education is seen as a means of achieving national goals such as increasing productivity, conserving energy and reducing youth unemployment, it may not experience the restriction of resources that appears likely for other areas of education. Nevertheless, the conservative fiscal climate in the nation, the probability of continued high rates of inflation, and competing demands for public funds suggest that vocational education will be hard pressed to meet the demands for replacment and modernization of equipment that will confront it in the 1980s.

Implications

If the 1980s do evolve as suggested above, vocational educators will have to develop innovative methods of serving a more heterogeneous group of clients. These methods will have to emphasize greater flexibility, including individualization of instruction with open-entry/open-exit, and more cooperation with other trainers and employers. Taken together these recommendations imply a fundamental shift in the role of a vocational instructor. The shift is from a primary emphasis on teaching to an emphasis on planning and managing learning experiences.

This is hardly a new recommendation. It has been advocated for most of the twentieth century. For the most part, however, practice has continued to emphasize teachers as the source of knowledge which they transmit to their students. Increases in older students with a wider range of abilities and experiences coupled with the adoption of competency based instruction should move teachers toward the planner-manager role.

Greater cooperation with employers will also require teachers to stress their planner-manager functions. In the 1980s students are likely to obtain more of their hands-on experience in actual work settings. The projected rate of technological change and limited resources for modernizing equipment point to the need for more cooperation with employers. Employers will have the equipment that students will have to master. With the anticipated restrictions in funds for education, it seems unlikely that vocational facilities will be able to keep pace with the equipment changes in business and industry.

Fortunately, vocational education has long recognized the value of learning in real employment settings. However, the most recent figures indicate that only about five percent of vocational students participate in cooperative programs (Lewis

1979). Greatly expanded interaction with employers, with virtually all students having coop placements, would bring about drastic changes in what vocational instructors actually do. They will no longer spend the greater part of their time explaining and guiding learning experiences in their own laboratories and classrooms. Instead they will spend their time working with students and employers to ensure that cooperative placements are real learning experiences and not simply training for employer-specific tasks or, worse yet, exploitation of students.

If vocational education is to remain truly education and not become job training for individual employers, its programs must increase opportunities, not limit them. There is the danger that increased interaction with employers will tend to narrow the training given students. It will be the responsibility of vocational educators, both practitioners and researchers, to find ways to realize the advantages that greater cooperation will bring while preserving the breadth and multiple options of traditional programs.

From the employer's point of view greater cooperation with vocational education is not an unmixed blessing. Providing staff and equipment for training purposes, even on-the-job training, involves both the direct costs of salary and equipment and the indirect costs of some losses in production. Questions can be raised about how many employers will be willing to incur these costs. Vocational educators have long claimed that the main limitation on greater use of cooperative placement has been the small proportion of employers who are willing to take part. If this is an accurate assessment of past willingness to cooperate, what would be necessary to stimulate a greatly expanded role for employers in the preparation of young people for employment?

Conclusion

The three main forces likely to influence vocational education in the 1980s point to a significant shift in the roles of vocational educators. This shift can perhaps best be summarized as a change from presenters of information to managers of learning. Vocational educators are likely to be carrying out their new roles with a more diverse body of students in a wider variety of settings.

Assuming this shift will come--and conceding that there are those who would deny both its necessity and desirability--how can R & D contribute? No attempt will be made here to make specific suggestions. The kinds of R & D proposed by thirty-two panelists are presented in chapter 3 for those who want specifics. It also should be acknowledged that R & D will probably not be the main contributer to the shift in roles.

Personnel development, particularly inservice activities, will have to carry the main responsibility for shifting the roles of vocational instructors.

Nevertheless, R & D can contribute in many crucial ways. It can identify the skills that vocational educators will need to carry out their new roles, and to design programs to teach these skills. R & D can be used to design and modify courses of study to enhance their flexibility and to adapt them for use in a variety of settings. R & D can further identify those skills that can be taught best or most efficiently in a standard classroom or laboratory and those that are best taught on the job.

Of course, major change, such as that discussed in this chapter, does not occur easily. There will be resistance both in the profession and in the larger community to efforts to greatly expand involvement of public vocational education with employers. Research can lead to a better understanding of the sources of this resistance and of methods for dealing with it.

This last statement implies a value judgment that movement toward a different role for vocational instructors which stresses greater involvement with employers is desirable. That value judgment is implicit throughout this chapter and is specifically acknowledged here. In light of the information gathered for this project and for the separate futures research being conducted at the National Center, it seems clear that vocational education must move toward greater flexibility and community involvement. In this direction lies an expanded concept of vocational education and more efficient and effective preparation of people for employment. Attempting to maintain traditional patterns seems certain to perpetuate existing stereotypes that vocational education is unresponsive to the needs of modern society.

APPENDIX A

MAJOR NEEDS OF VOCATIONAL EDUCATION

*

Availability of Programs

General--Any individual who is interested in vocational education training should have access to appropirate programs. (Note: This category involves having appropriate programs available within reasonable travel distance. It does not include providing services to enable persons with special problems to succeed in vocational programs; these services are listed as a separate need.)

Specific Groups:

1. Adults--course of courses for persons who have completed or left high school to prepare them to enter, re-enter or to progress in the work force
2. Postsecondary--distinguished from adult by an organized program of study
3. Unemployed, out-of-school youth
4. Underemployued youth and adults who seek to progress in a career or change to a new career path
5. Removing locational barriers such as rural or inner city residents
6. Women

Career Development Programs

General--Programs should be developed and implemented to improve the awareness, exploration, planning and decision-making ability of individuals with regard to career opportunities and career developoment.

Specific Types of Programs:

1. Career Education Programs
2. Vocational Guidance and Counseling
3. Development of Positive Work Habits

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*The arrangement of this list is alphabetic and no priority order is implied.

Community (Citizen) Involvement, Participation and Communication

General--There should be efforts for greater interaction, involvement and communication with community representatives (not including involvement of employers or labor unions which is listed as a separate need).

Specific types of involvement and communication:

1. Establishing goals
2. Development of curriculum (advisory groups)
3. Evaluation of programs
4. Specific references to National Advisory Council
5. Specific reference to State Advisory Councils
6. Public image--the image that vocational education has in the community should be improved; there should be better communication of the benefits of vocational education.

Coordination

General--Vocational education should be coordinated with academic education to enhance relevance and there should be greater articulation across postsecondary, adult, and Department of Labor training programs.

Curriculum Content and Instruction

General--Curriculum and instruction should be upgraded and improved.

Specific Recommendations:

1. Consumer and homemaking education--programs consisting of consumer education, food and nutrition, family living and parenthood education, child development and guidance, housing and home management, and clothing and textiles should be instituted.
2. Energy education--there should be training of coal miners supervisors, and technicians in the field of coal mining, also in solar energy and other alternative energy sources.

3. Relevance--training should be for today's labor market and for new and changing occupations.

Data Collection Evaluation

General--There is a need for more and better data on inputs and processes of vocational education, better evaluation of effectiveness, and better access to and utilization of data.

Equipment and Facilities

General--Up-to-date equipment and facilities should be provided.

Specific needs:

1. Facilities should be renovated and remodeled to provide vocational education designed to meet today's needs.

Funding

General--Adequate Funding should be provided.

Specific Needs:

1. Funds should be used more effectively

2. Funding levels need to be known far enough in advance for effective planning

3. Methods should be established to ensure compliance with existing regulations in the use of federal funds.

Interaction With Employers

General--There should be more interaction and involvement of employers in vocational education.

Specific needs:

1. Wider use of cooperative vocational education programs

2. Wider use of work study programs

3. Greater coordination and cooperation with labor unions to develop preapprentice and journeyman training programs

Personnel Development

General--The qualifications of persons working or preparing to work in vocational education should be improved.

Specific needs:

1. There should be more representation of women and ethnic group members in the administration of vocational education.

2. Specific preparation for special areas of vocational education.

Planning

General--There should be more and improved planning to guide the development and administratin of vocational education.

Specific needs:

1. All training resources should be considered in developing plans.

Research and Development

General--R & D should be supported to encourage the improvement and responsiveness of vocational education.

Specific Needs:

1. Dissemination and utilization--there should be greater knowledge about the use of research results.

Sex Discrimination and Sex Stereotyping/Equal Opportunity

General--All artificial barriers to participation in vocational programs should be eliminated.

Specific needs:

1. Sex discrimination and sex stereotyping should be overcome in vocational education programs.

2. No one should be prevented from taking vocational courses on the basis of race, ethnicity, or cultural origins.

Special Needs Groups

General--Appropriate vocational education programs should be provided for individuals who require special programs, modifications of programs, or supplemental services to help them succeed.

Specific groups:

1. Handicapped - Mental, hearing, deaf, speech impaired visually handicapped, seriously emotionally disturbed, crippled, or other health impaired.

2. Disadvantaged - Persons with academic or economic problems.

3. Bilingual- Persons with limited English speaking ability.

4. Inmates of correction institutions.

5. Women

6 Other

Transition from School to Work

General--Methods should be developed to help prepare students for job entry.

Special Needs:

1. In-school preparation for transition: job seeking skills, presenting one's self in job interviews, etc.

2. Students should be prepared for occupational adaptability and flexibility.

3. Job placement (and follow-through) service should be provided.

APPENDIX B

INSTRUCTIONS AND FUTURES SCENARIO SENT TO PANELISTS

LETTER OF INSTRUCTION TO PANELISTS

Thank you for agreeing to help us try to anticipate what the national research and development priorities should be in Vocational Education for the 1980's. The information which we gather from you and other participants will be provided to the U.S. Office of Vocational and Adult Education for use in setting national research and development priorities.

Enclosed is a brief scenario of the major trends and problems that vocational education is likely to face in the 1980's. We would like you to use this scenario as a starting point. On the enclosed Reaction Sheet, please indicate first if you disagree with any of the projections presented in the scenario, or if we have omitted any major influences. Then, in light of your conception of what the 1980's will be like, list the major research and development activities that you think should be conducted in the coming year.

Also enclosed are the forms that you will need to sign as a consultant to the National Center. Please sign two copies of each form, where indicated. Return the two signed copies in the envelope provided and retain one copy of each for your files.

Thank you again for your help. Please try to return your reactions and the forms by October 17.

Sincerely,

Morgan V. Lewis
Senior Research Specialist

MVL/lp

Enclosures

A LOOK FORWARD TO VOCATIONAL EDUCATION IN THE 1980s

The world of vocational education in the 1980s will not be drastically different from that of the 1970s. Some significant changes, however, are expected to occur. Due to the drop in the birth rate in the 1960s and 1970s there will be fewer young people and enrollment in secondary vocational education will decline by approximately 13 percent. Another effect of the changing demographics will be a rising proportion of young people who come from economically disadvantaged or limited English-speaking backgrounds. These young people will need and demand preparation and jobs in order that they may join the economic mainstream of American society. The impact of the women's liberation movement, which changed the composition of the labor force during the 1970s, will cause many adult women to be seeking vocational education during the 1980s. Other adults and older persons who are making career changes will also require additional vocational training.

Other factors besides population shifts will also cause changes in vocational education. Education in general, will receive proportionately less of the Gross National Product. Although the actual number of dollars allocated by the federal and state governments to vocational education may not decline, inflation and increased competition for public funds will effectively reduce the real resources directed to education.

The energy crisis will continue to grow in seriousness. The search for alternate energy sources and methods of energy conservation will become the critical domestic problems of the decade and their resolution will not be foreseeable. Technological developments and advancements will continue at a pace which is remarkable. Many of the breakthroughs will require a highly skilled work force to implement the technology in a manner that the quality of life for the common man and woman can be improved. Productivity rates of American industries will become increasingly less competitive in the world market, and combined with American workers' demands for larger incomes (to keep pace with inflation), the prices of American goods and services will be driven even higher.

These trends and problems will place new demands upon vocational education. Much of the response will be carried out through normal program adjustments, but there will be a greater emphasis on competency based instruction. There also will be more community involvement, especially in cooperative training arrangements. By the end of the 1980s vocational education is likely to be a more diverse enterprise both in terms of the characteristics of the clients it serves and the settings in which it is conducted.

PANELISTS

Panelist	Organizational Affiliation	City/State
Rosemary Anderson	Opportunities Industrialization Center	Portland, OR
Lois M. Barr	Southeast Career Center	Columbus, OH
R.D. Balthaser	State Department of Education	Columbus, OH
Catherine Batsche	University of Illinois	Urbana, IL
Anne L. Boone	Baltimore City Schools	Baltimore, MD
Joseph S. Bowman, III	Opportunities Industrialization Center	Seattle, WA
C.J. Cotrell	Temple University	Philadelphia, PA
Warner Dickerson	State Technical Institute at Memphis	Memphis, TN
Rupert Evans	University of Illinois	Urbana, IL
Donovan W. Fenderson	Lorain Joint Vocational School	Oberlin, OH
Patricia E. Goggans	State Department of Education	Denver, CO
Katy Greenwood	Texas A&M University	College Station, T
Juan Guzman	Pacific University	Forest Grove, OR
Sylvia Hinojosa	Edgewood Independent School District	San Antonio, TX
James Jacobs	Marion Educational Service District	Salem, OR
Ella Johnson	Southview Senior High School	Elyria, OH

Panelist	Organizational Affiliation	City/State
Barbara Lett-Simmons	D.C. Board of Education	Washington, DC
Ronald McCage	Southern Association of Colleges and Schools	Atlanta, GA
Santo Marzullo	University of the District of Columbia	Washington, DC
Jean Moorehead	Baltimore City Public Schools	Baltimore, MD
L. Allen Phelps	University of Illinois	Urbana, IL
Michelle Sarkees	University of Georgia	Athens, GA
Carl Schaefer	Rutgers - The State University	Brunswick, NY
Curtis Paul Scott	University of Georgia	Athens, GA
Brandon Burmell Smith	University of Minnesota	Minneapolis, MN
Merle Strong	University of Wisconsin	Madison, WI
Hollie Thomas	Florida State University	Tallahassee, FL
Daniel Vacarel	State Department of Education	Columbus, OH
Eugene T. Vinarski	State Department of Education	Salem, OR
John Steven Washburn	State Department of Education	Springfield, IL
Jean Wilson	Cheyney State College	Cheyney, PA
Cecil Y. Wright	Texas Education Agency	Austin, TX

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